

What is claimed is:

1. An optical disc including a data area and a time map area, the data area recording a video object that includes a plurality of data units, each of which contains at least one 5 picture,

the time map area recording a table showing recording addresses of data units, the addresses corresponding to a plurality of reproduction times that belong to a period during which the video object is reproduced, each of the data units 10 containing a picture to be reproduced at a corresponding one of the plurality of reproduction times, and

the time map area further recording offset information used to correct the table after the first portion of the video 15 object is deleted.

2. The optical disc of Claim 1 further including

a program chain area that records a plurality of sets of cell information, each of which includes a start time and an end time which are used to identify a reproduction section 20 in the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.

3. A recording apparatus for recording video data onto an optical disc, comprising:

25 an input unit operable to receive input video data to be recorded;

a compressing unit operable to compress the input video data and generate a video object containing a plurality of data units, each of which contains at least one picture;

30 a writing unit operable to write data onto the optical disc; and

a control unit operable to control the writing unit,
wherein

the control unit

- (a) controls the writing unit to write the video object onto a data area of the optical disc,
- 5 (b) generates a table showing recording addresses of data units, the addresses corresponding to a plurality of reproduction times that belong to a period during which the video object is reproduced, each of the data units containing a picture to be reproduced at a corresponding one of the plurality of reproduction times,
- (c) generates offset information used to correct the table after the first portion of the video object is deleted, and
- 15 (d) controls the writing unit to write the table into a time map area of the optical disc.

4. The recording apparatus of Claim 3, wherein

when receiving a notification that the first portion of

- 20 the video object has been deleted, the control unit updates the table and the offset information in accordance with a reproduction time of the deleted portion, and controls the writing unit to write the updated table and offset information.

25 5. The recording apparatus of Claim 3, wherein the optical disc further includes

- 30 a program chain area that records a plurality of sets of cell information, each of which includes a start time and an end time which are used to identify a reproduction section in the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.

6. A recording method for use in a recording apparatus for recording onto an optical disc a video object containing a plurality of data units, each of which contains at least one picture, the recording method comprising the steps of:

5 (a) writing the video object onto a data area of the optical disc,

10 (b) generating a table showing recording addresses of data units, the addresses corresponding to a plurality of reproduction times that belong to a period during which the video object is reproduced, each of the data units containing a picture to be reproduced at a corresponding one of the plurality of reproduction times,

15 (c) generating offset information used to correct the table after the first portion of the video object is deleted, and

20 (d) writing the table and the offset information onto a time map area of the optical disc.

20 7. The recording method of Claim 6 further comprising the step of

when receiving a notification that the first portion of the video object has been deleted, updating the table and the offset information in accordance with a reproduction time of the deleted portion, and writing the updated table and offset information.

8. The recording method of Claim 6, wherein the optical disc further includes

30 a program chain area that records a plurality of sets of cell information, each of which includes a start time and

an end time which are used to identify a reproduction section in the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.

5 9. A reproducing apparatus for reproducing the video object recorded on the optical disc defined in Claim 1, the reproducing apparatus comprising:

 a reading unit operable to read data from the optical disc;

10 a reproducing unit operable to reproduce the video object; and

 a control unit operable to control the reading unit and the reproducing unit, wherein

 the control unit

15 (a) receives an input reproduction start time,

 (b) controls the reading unit to read out the table and the offset information,

 (c) refers to the read-out table and offset information and identifies a data unit that includes a picture to be reproduced at the input reproduction start time, and

20 (d) controls the reading unit and the reproducing unit to start reproducing in accordance with the identified data unit.

25 10. The reproducing apparatus of Claim 9, wherein the optical disc further includes

 a program chain area that records a plurality of sets of cell information, each of which includes a start time and an end time which are used to identify a reproduction section in

30 the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.

11. A reproduction method for use in a reproducing apparatus
for reproducing the video object recorded on the optical disc
defined in Claim 1, the reproduction method comprising the
5 steps of:

- (a) receiving an input reproduction start time,
- (b) controlling the reading unit to read out the table and
the offset information,
- (c) referring to the read-out table and offset information
10 and identifying a data unit that includes a picture to
be reproduced at the input reproduction start time, and
- (d) controlling the reading unit and the reproducing unit to
start reproducing in accordance with the identified data
15 unit.

16 12. The reproduction method of Claim 11, wherein the optical
disc further includes

17 a program chain area that records a plurality of sets
of cell information, each of which includes a start time and
20 an end time which are used to identify a reproduction section
in the video object, the plurality of sets of cell information
being recorded in correspondence with reproduction orders.

25 13. A computer-readable recording medium recording a program
for use in a recording apparatus for recording onto an optical
disc a video object containing a plurality of data units, each
of which contains at least one picture, the program allowing
a computer to execute the steps of:

- (a) writing the video object onto a data area of the optical
30 disc,
- (b) generating a table showing recording addresses of data

units, the addresses corresponding to a plurality of reproduction times that belong to a period during which the video object is reproduced, each of the data units containing a picture to be reproduced at a corresponding one of the plurality of reproduction times,

5 (c) generating offset information used to correct the table after the first portion of the video object is deleted, and

(d) writing the table and the offset information onto a time map area of the optical disc.

14. The computer-readable recording medium of Claim 13, wherein the program further allows the computer to execute the step of

when receiving a notification that the first portion of the video object has been deleted, updating the table and the offset information in accordance with a reproduction time of the deleted portion, and writing the updated table and offset information.

15. The computer-readable recording medium of Claim 13, wherein the optical disc further includes

25 a program chain area that records a plurality of sets of cell information, each of which includes a start time and an end time which are used to identify a reproduction section in the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.

16. A computer-readable recording medium recording a program for use in a reproducing apparatus including (a) a reading unit operable to read data from the optical disc defined in Claim

1 and (b) a reproducing unit operable to reproduce a video object, the program allowing a computer to execute the steps of

(a) receiving an input reproduction start time,

5 (b) controlling the reading unit to read out the table and the offset information,

(c) referring to the read-out table and offset information and identifying a data unit that includes a picture to be reproduced at the input reproduction start time, and

10 (d) controlling the reading unit and the reproducing unit to start reproducing in accordance with the identified data unit.

17. The computer-readable recording medium of Claim 16,

15 wherein the optical disc further includes

a program chain area that records a plurality of sets of cell information, each of which includes a start time and an end time which are used to identify a reproduction section in the video object, the plurality of sets of cell information being recorded in correspondence with reproduction orders.